What is claimed is:

1. An endoscope observation system comprising:

an illumination optical system having a light source for supplying illumination light to an object;

an objective optical system that forms a magnified image of the object such that the absolute value of the image scale factor is larger than 1; and

an image pickup element that detects said magnified image;

wherein

said illumination optical system is provided with a wavelength selection means for, when dividing, among the blue, green, and red wavelength ranges in the illumination light from the light source, either the blue wavelength range or the red wavelength range into two wavelength bands T1 and T2, with the wavelength band T1 being nearer the green wavelength range than is the wavelength band T2, preventing the wavelength band T1 from illuminating the object.

2. The endoscope observation system according to claim 1, wherein the wavelength band T1 is within the range: 600 nm $\leq$ T1 $\leq$ 700 nm.

3. An endoscope comprising:

an observation unit; and

an illumination unit that illuminates an illumination field;

wherein

the observation unit includes an objective optical system having an observation field of view and an in-focus position; and

the observation field of view of the objective optical system at the in-focus position of the objective optical system does not overlap said illumination field.

4. An endoscope comprising:

an image pickup unit having an observation field of view, the image pickup unit

including an objective optical system that forms a magnified image of an object in the observation field of view such that the absolute value of the image scale factor is larger than 1; and

an illumination unit;

wherein

the image pickup unit and the illumination unit are positioned so that the observation field of view of the image pickup unit at the in-focus position does not overlap the illumination field of the illumination unit.

5. An endoscopic illumination method in which a light source that does not directly illuminate an observation field of view illuminates an area of tissue outside the observation field of view, and said area of tissue scatters the light from the light source so as to illuminate the observation field of view.

6. A method for observing epithelial cells of living tissue using the endoscope according to claim 3, said method comprising:

a step in which the illumination light emitted from the illumination system is scattered and reflected by the parenchymal tissues underlying the epithelial cells so as to illuminate the epithelial cells.

7. A method for observing epithelial cells of living tissue using the endoscope according to claim 4, said method comprising:

a step in which the illumination system of the endoscope illuminates the underlying parenchymal tissues of the epithelial cells; and

a step in which the illumination light emitted from the illumination system is scattered and reflected by the parenchymal tissues underlying the epithelial cells to illuminate the epithelial cells.

8. An endoscopic, in vivo cellular observation method in which, based on magnified images of living tissue, the number of cell nuclei captured in the field of view is used to evaluate the cell size, or the distance between cell nuclei captured in the field of view is used to evaluate the population density of the nuclei, for diagnosis of abnormal cells, said method comprising the following steps:

(a) introducing a coloring agent having blue or red wavelength absorption into cells of living tissue to be imaged so as to enhance the contrast of cell nuclei using the difference in the retention rate of the coloring agent between the nuclei and the other portions of the cells;

(b) illuminating the cells with light having the absorption wavelength; and

(c) displaying several tens to several hundreds of cell nuclei captured in the field of view so as to facilitate said diagnosis.

9. An endoscopic, in vivo cellular observation method comprising the following steps:

(a) applying a blue or red wavelength band absorption substance to cells of living tissue to be imaged;

(b) illuminating, when dividing the absorption wavelength band into two wavelength bands T1 and T2, the cells with the illumination light of which the wavelength band T1 closer to the green wavelength range is cut off, thereby enhancing the contrast of cell nuclei using the difference in light absorption for the wavelength band T2 between the cell nuclei and other portions of the cells; and

(c) displaying several tens to several hundreds of cell nuclei captured in the field of view for the purpose of evaluating the likelihood that the in vivo cells are cancerous.

10. An endoscopic, in vivo cellular observation method in which, based on magnified images of living tissue, the ratio of the area of the cell nuclei divided by the area within the cell walls in the field of view is evaluated for diagnosis of abnormal cells, said endoscopic, in vivo cellular observation method comprising the following steps, performed in the order indicated:

(a) introducing a coloring agent having blue or red wavelength absorption into cells of

living tissue to be imaged so that the contrast of cell nuclei will be enhanced due to a difference in retention rate of the coloring agent in the cell nuclei versus other portions of the cells;

(b) illuminating the cells with light having the absorption wavelength;

(c) displaying several cell nuclei captured in the field of view for the purpose of evaluating the likelihood that the in vivo cells are cancerous.

11. An endoscopic, in vivo cellular observation method in which, using the endoscope observation system according to claim 1, the ratio of the area of the cell nuclei divided by the area within the cell walls in the field of view is evaluated for diagnosis of abnormal cells, said endoscopic, in vivo cellular observation method comprising the following steps, performed in the order indicated:

(a) applying a substance having blue or red wavelength band absorption to cells of living tissue to be imaged so as to enhance the contrast of cell nuclei versus other cell portions using a difference in absorbency of said substance by the cell nuclei versus the other cell portions;

(b) illuminating, when dividing the absorption wavelength band into two wavelength bands, T1 and T2, the cells with illumination light wherein the wavelength band T1 is cut off, where T1 is wavelength band among T1 and T2 that is closer to the green wavelength range;

(c) displaying several cell nuclei captured in the field of view; and

(d) determining said ratio so as to diagnose the presence/absence of abnormal cells in the field of view.

12. The endoscopic, in vivo cellular observation method according to claim 10, wherein:

the endoscope that is used has an objective optical system with a numerical aperture on the object side of 0.3 or larger.

13. The endoscopic, in vivo cellular observation method according to claim 11, wherein:

the endoscope that is used has an objective optical system with a numerical aperture on the object side of 0.3 or larger.

14. An endoscope observation system comprising:

an image pickup unit that includes a magnifying objective optical system having an image scale factor with an absolute value that is greater than unity; and

a light source for supplying illumination light, the light source being an LED that emits single color light rays directly onto an object to be observed by the endoscope.

15. The endoscope according to claim 14, and further comprising:

an elongated portion adapted for insertion into a channel installed in another endoscope; wherein

the image pickup unit is mounted at a distal end of the elongated portion.

16. An endoscope observation system comprising:

an illumination optical system having a light source for supplying illumination light to an object;

an objective optical system that forms a magnified image of the object such that the absolute value of the image scale factor is larger than 1; and

an image pickup element that detects said magnified image;

wherein

said illumination optical system is provided with a wavelength selection filter which, when dividing, among the blue, green, and red wavelength ranges in the illumination light from the light source, either the blue wavelength range or the red wavelength range into two wavelength bands T1 and T2, with the wavelength band T1 being nearer the green wavelength range than is the wavelength band T2, prevents the wavelength band T1 from illuminating the object.